



## INVESTIGATOR'S ANNUAL REPORT

United States Department of the Interior  
National Park Service

All or some of the information you provide may become available to the public.

OMB # (1024-0236)  
Exp. Date (11/30/2010)  
Form No. (10-226)

<b>Reporting Year:</b> 2009	<b>Park:</b> Shenandoah NP	<b>Select the type of permit this report addresses:</b> Scientific Study													
<b>Name of principal investigator or responsible official:</b> Anita Struzinski		<b>Office Phone:</b> 410-771-4950 x5922													
<b>Mailing address:</b> 15 Loveton Circle Sparks, MD 21152 USA		<b>Office FAX</b> 410-472-9875 <b>Office Email</b> astruzinski@eaest.com													
<b>Additional investigators or key field assistants (first name, last name, office phone, office email)</b> <table><tr><td><b>Name:</b> John Matkowski</td><td><b>Phone:</b> 410-771-4950</td><td><b>Email:</b> jmatkowski@eaest.com</td></tr><tr><td><b>Name:</b> Stephen Mudge</td><td><b>Phone:</b> +44 (0)1423 853200</td><td><b>Email:</b> s.m.mudge@bangor.ac.uk</td></tr><tr><td><b>Name:</b> Michael Ciarlo</td><td><b>Phone:</b> 410-771-4950</td><td><b>Email:</b> mciarlo@eaest.com</td></tr><tr><td><b>Name:</b> Sarah Grannemann</td><td><b>Phone:</b> 410-771-7950</td><td><b>Email:</b> sgrannemann@eaest.com</td></tr></table>				<b>Name:</b> John Matkowski	<b>Phone:</b> 410-771-4950	<b>Email:</b> jmatkowski@eaest.com	<b>Name:</b> Stephen Mudge	<b>Phone:</b> +44 (0)1423 853200	<b>Email:</b> s.m.mudge@bangor.ac.uk	<b>Name:</b> Michael Ciarlo	<b>Phone:</b> 410-771-4950	<b>Email:</b> mciarlo@eaest.com	<b>Name:</b> Sarah Grannemann	<b>Phone:</b> 410-771-7950	<b>Email:</b> sgrannemann@eaest.com
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<b>Project Title (maximum 300 characters):</b> Fatty Alcohols in the Terrestrial Environment															
<b>Park-assigned Study or Activity #:</b> SHEN-00366	<b>Park-assigned Permit #:</b> SHEN-2009-SCI-0011	<b>Permit Start Date:</b> May 27, 2009	<b>Permit Expiration Date:</b> Dec 31, 2009												
<b>Scientific Study Starting Date:</b> May 27, 2009		<b>Estimated Scientific Study Ending Date:</b> Dec 31, 2009													
<b>For either a Scientific Study or a Science Education Activity, the status is:</b>  Continuing		<b>For a Scientific Study that is completed, please check each of the following that applies:</b>  <input type="checkbox"/> A final report has been provided to the park or will be provided to the park within the next two years  <input type="checkbox"/> Copies of field notes, data files, photos, or other study records, as agreed, have been provided to the park  <input type="checkbox"/> All collected and retained specimens have been cataloged into the NPS catalog system and NPS has processed loan agreements as needed													
<b>Activity Type:</b> Research															
<b>Subject/Discipline:</b> Water Quality															

### Purpose of Scientific Study or Science Education Activity during the reporting year (maximum 4000 characters):

Fatty alcohols may enter the freshwater environment from a range of sources including both natural production by animals and plants as well as the use of man-made products such as liquid detergents and cosmetics. The purpose of this study is to determine how fatty alcohols from soap and other sources behave in streams and rivers. The town of Luray, Virginia was chosen as the sampling site because it met the following criteria: upland headwaters with no development or only small sewage related inputs to provide a clean signature; forests with ideally both coniferous and deciduous trees; a silty river; agriculture land with upland grazing and lowland crop land; a well defined town/city with urban surface water runoff into the river prior to any WWTP facility; and a downstream WWTP. Samples were taken in the summer of 2009 from wastewater treatment plant (WWTP) influent and effluent, and receiving waters and sediments in the vicinity of the WWTP. Using special chemical analyses, this study will be able to identify where the fatty alcohols in creek sediments originate. This information is important because it can be used by organizations that

produce soap and detergent to make decisions regarding their products.

**Findings and status of Scientific Study or accomplishments of Science Education Activity during the reporting year (maximum 4000 characters):**

Previous studies have indicated that stable isotope signatures can be reliably used to distinguish between natural and synthetic fatty alcohols. This method is being used to assess the source of fatty alcohols in the Hawksbill Watershed of Luray, Virginia. In the spring of 2009, a total of 80 samples were taken throughout the Hawksbill Creek watershed. In addition, personal care products were purchased from local stores within the town of Luray. The products purchased were based on the results of market surveys from Roanoke, Virginia that identified the most popular products; these products would be the predominant contributors to the wastewater stream in the Hawksbill Creek watershed. The field samples and personal care product samples are currently being analyzed using the stable isotope method. The results of the analysis should help to assess the source of fatty alcohols in the watershed and provide the data necessary to document the existing physical and chemical characteristics of the watershed in the project area.

Details of the field and product sampling can be found in Field Report for Soap and Detergent Association Fatty Alcohol Sourcing Study (EA, 2009), which has been provided in hard copy form to the park. Details and results of the analysis will be provided to the park when the laboratory analysis and report have been completed.

**For Scientific Studies (not Science Education Activities), were any specimens collected and removed from the park but not destroyed during analysis?**

No

**Funding specifically used in this park this reporting year that was provided by NPS (enter dollar amount):**

\$0

**Funding specifically used in this park this reporting year that was provided by all other sources (enter dollar amount):**

\$28000

**List any other U.S. Government Agencies supporting this study or activity and the funding each provided this reporting year:**

**Paperwork Reduction Act Statement:** A federal agency may not conduct or sponsor, and a person is not required to respond to a collection of information unless it displays a valid OMB control number. Public reporting for this collection of information is estimated to average 1.625 hours per response, including the time for reviewing instructions, gathering and maintaining data, and completing and reviewing the forms. Direct comments regarding this burden estimate or any aspect of this form to Dr. John G. Dennis, Natural Resources (3127 MIB), National Park Service, 1849 C Street, N.W., Washington, DC 20240.